#### Message

From: Moritz, Vera [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP

(FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FC42FD8127354991AD38B2ACB5C3651A-MORITZ, VERA]

**Sent**: 9/1/2017 10:04:00 PM

**To**: Spreng - CDPHE, Carl [carl.spreng@state.co.us]

CC: Surovchak, Scott [Scott.Surovchak@lm.doe.gov]; Jeff Murl [jeffrey.murl@lm.doe.gov]; Lindsay Masters - CDPHE

[lindsay.masters@state.co.us]

**Subject**: RE: RF - 5 year review presentation for RFSC

Thanks! Good point about the surface vs. subsurface. The subsurface soil would come into play re: the concept that in order to mobilize there would have to be a source - Vera

From: Spreng - CDPHE, Carl [mailto:carl.spreng@state.co.us]

**Sent:** Friday, September 1, 2017 3:58 PM **To:** Moritz, Vera <Moritz.Vera@epa.gov>

Cc: Surovchak, Scott <Scott.Surovchak@lm.doe.gov>; Jeff Murl <jeffrey.murl@lm.doe.gov>; Lindsay Masters - CDPHE

dindsay.masters@state.co.us>

Subject: Re: RF - 5 year review presentation for RFSC

Vera,

Since it is surface soil that most affects surface water levels of Pu/Am, I would change the latter part of your response:

#### - Was any soil sampling done after the 2013 floods?

No. Surface water acts as a comprehensive indicator of any pollution that would be at the surface. As well, the Pu/Am standard is set at one hundredth of the drinking water standard. This is a very sensitive standard.

The RI/FS Report and the CAD/ROD describe the residual Pu contamination in surface soil, which is at very low levels. The highest level measured in the COU is 49 pCi/g; the average is 2.3 pCi/g.

You also asked about toxicity factors. The 5YR uses "toxicity values". For non-carcinogens, these are Reference Doses (ingestion) or Reference Concentrations (inhalation). Carcinogens use cancer slope factors. Slope Factors are the empirically derived numbers in the cancer risk equations that relate lifetime exposures to lifetime cancer risks. Here are some official (and dense) definitions:

1) The Radionuclide Table and User's Guide. The April 2001 update of the Radionuclide Carcinogenicity Slope Factors for HEAST is based on <u>Federal Guidance Report No. 13</u>, which was developed by EPA's Office of Radiation and Indoor Air (ORIA).

"Ingestion and inhalation slope factors are central estimates in a linear model of the age-averaged, lifetime attributable radiation cancer incidence (fatal and nonfatal cancer) risk per unit of activity inhaled or ingested, expressed as risk/pCi. External exposure slope factors are central estimates of lifetime attributable radiation cancer incidence risk for each year of exposure to external radiation from photon-emitting radionuclides distributed uniformly in a thick layer of soil, and are expressed as risk/yr per pCi/gram soil. When combined with site-specific media concentration data and appropriate exposure assumptions (8), slope factors can be used to estimate lifetime cancer risks to members of the general population due to radionuclide exposures."

2) IRIS, Exposure Factors Handbook, etc.

"An upper bound, approximating a 95% confidence limit, on the increased cancer risk from a lifetime exposure to an agent. This estimate, usually expressed in units of proportion (of a population) affected per mg/kg-day, is generally reserved for use in the low-dose region of the dose-response relationship, that is for exposures corresponding to risks less than 1 in 100."

Hope this all helps.

# Carl Spreng

Corrective Action Unit

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On Fri, Sep 1, 2017 at 12:26 PM, Moritz, Vera < Moritz. Vera@epa.gov > wrote:

Carl – about anticipating questions – yes, I've been thinking about them and looking forward to responding. Keep sending any other questions you can think of, it's very helpful

As to the 2 questions in your email below, here's how I'd answer --

- Was any soil sampling done after the 2013 floods?

No.

Surface water acts as a comprehensive indicator of any pollution that would be at the surface. As well, the Pu/Am standard is set at one hundredth of the drinking water standard. This is a very sensitive standard.

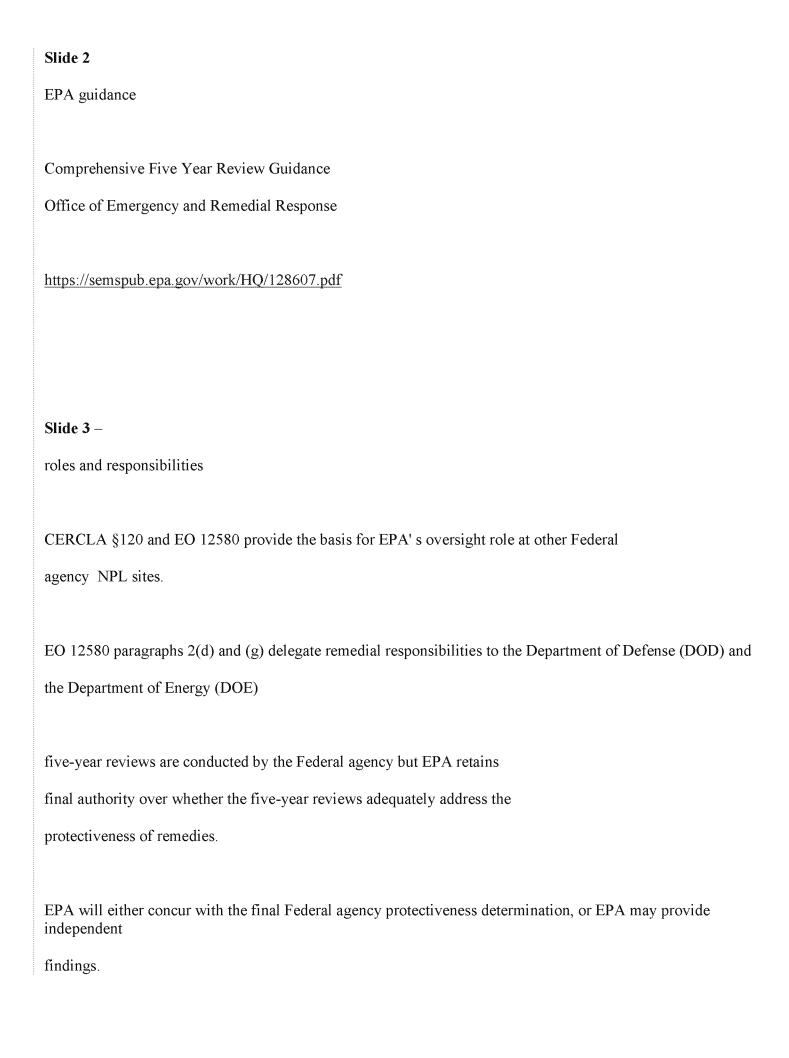
The CAD/ROD describes the residual contamination left in the subsurface, which is very low levels. *The highest residual surface soil value for plutonium-239/240 was 183* 

pCi/g, found in a confirmation sample from the floor of an excavation five feet below

grade (now backfilled) near the former Building 776. This location also recorded the

highest remaining level of americium-241 in surface soil at Rocky Flats (51.2 pCi/g).
- What did the recalculation of PRGs determine? (hope we don't have to get into the weeds on this)
From: Surovchak, Scott [mailto:Scott.Surovchak@lm.doe.gov]  Sent: Monday, August 28, 2017 12:37 PM  To: Spreng - CDPHE, Carl <carl.spreng@state.co.us>; Moritz, Vera &lt;<a href="Moritz.Vera@epa.gov">Moritz.Vera@epa.gov</a>  Subject: RE: RF - 5 year review presentation for RFSC</carl.spreng@state.co.us>
I like the outline and agree with Carl's suggestions. The map really will set the stage for COU/POU/OU-3 discussions. I'll pass it on to my group here for suggestions as uniformed audience members. I think that covers the anti's.
From: Spreng - CDPHE, Carl [mailto:carl.spreng@state.co.us] Sent: Monday, August 28, 2017 9:28 AM To: Moritz, Vera Cc: Surovchak, Scott Subject: Re: RF - 5 year review presentation for RFSC
Vera,
I think this is a good basic outline of the process and report. There won't be room on some slides for all the words; some bullets will have to be shortened to fit. Consider moving the map up to at least in front of slide #9, maybe even further, to provide some context and orientation for the presentation.
We should all be anticipating questions/comments, for example:
- Was any soil sampling done after the 2013 floods?
- What did the recalculation of PRGs determine? (hope we don't have to get into the weeds on this)
You'll do great. We'll be there to provide moral support (from the back row).

Carl
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On Fri, Aug 25, 2017 at 5:39 PM, Moritz, Vera < Moritz. Vera@epa.gov > wrote:  Scott – Here's what I've been thinking about a presentation for the 9/11 RFSC – what do you think? Would it be possible to get one of your folks to render this into a set of power point slides that I could use for the presentation? Many thanks!!! – Vera Carl – any suggestions for improvement?
Slide 1 –
Overview
Fourth Five Year Review Report – Rocky Flats
Rocky Flats Stewardship Council Meeting
September 11, 2017



#### Slide 4

Contents of the 5 YR (1)

- 1.0 Introduction
- 2.0 Background
- 3.0 Remedial Actions
- 4.0 Progress Since the Last Five-Year Review
- 5.0 Five-Year Review Process
- 6.0 Technical Assessment
- 6.1 Question A: Is the Remedy Functioning as Intended by the Decision Documents
- 6.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and RAOs Used at the Time of the Remedy Still Valid?
- 6.3 Question C: Has Any Other Information Come to Light That Could Call into Question the Protectiveness of the Remedy?

Question the Protectiveness of the Remedy?

7.0 Issues, Recommendations, and Follow-Up Actions

# Slide 5

Contents of the 5 YR (2) – Appendices

Appendix A Site Chronology

Appendix B Rocky Flats Legacy Management Agreement Attachment 2

Appendix C Risk Assessment Review for COU, POU, and OU3

Appendix D RFLMA Contact Records

Appendix E Groundwater and Surface Water Monitoring

Appendix F Documents Reviewed Appendix G Site Inspection Checklist Appendix H Changes to Applicable, Relevant, and Appropriate Requirements Appendix I Responses to Stakeholder Input on the FYR Slide 6 Question A: Is the Remedy Functioning as Intended by the Decision **Documents?** • Institutional controls are in place and effective in meeting the objectives presented in Table 2. Physical controls are in place and effective at preventing human health exposures from contaminated groundwater, surface water, and soil. • Required groundwater and surface water monitoring is ongoing and supports achievement of

 Required groundwater and surface water monitoring is ongoing and supports achievement of RAOs in the long term.

• Operation and maintenance (O&M) of remedy components at the OLF, PLF, and groundwater treatment systems is ongoing and supports achievement of RAOs in the long term.

## Slide 7

Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and RAOs Used at the Time of the Remedy Still Valid?

-The exposure assumptions, toxicity levels, cleanup levels, and RAOs used at the time of the remedy are still valid,

- -There were no changes in exposure pathways or assumptions
- -Revisions/changes to surface water quality standards and toxicity levels were assessed and determined to not impact the remedy

#### Slide 8

Question C: Has Any Other Information Come to Light That Could

Call into Question the Protectiveness of the Remedy?

The remedy remained protective despite high precipitation events and extreme weather variability

# Slide 9

OU3 and POU determinations of UU/UE

The 2006 CAD/ROD determined that conditions in the POU are acceptable for unrestricted use and unlimited exposure

In May 2007, the POU was deleted from the NPL and the lands comprising the POU were transferred to the U.S. Fish and Wildlife Service for

establishment as the Rocky Flats National Wildlife Refuge.

Operable Unit 3 consists of lands outside the site boundary.

addressed under a separate CAD/ROD June 1997, and the OU was deleted from the NPL in May 2007.

A review of changes to toxicity factors conducted for this FYR confirmed that conditions in OU3 and the POU remain suitable for unlimited use and unrestricted exposure.

# Slide 10

Map (from p. 2 of the FYR

#### Slide 11

# **Protectiveness Statement**

The remedy at the COU is protective of human health and the environment.

- -Interim removal actions completed prior to the CAD/ROD included the removal of contaminated soils and sediments, decontamination and removal of equipment and buildings, construction of cover systems at the two landfills, and construction and operation of four groundwater treatment systems.
- -A monitoring and maintenance plan is in place to ensure the long-term integrity of the remedy.
- -Routine inspections of remedy components ensure that maintenance and repairs are identified and implemented.
- -Groundwater treatment systems continue to reduce contaminant load to surface water.
- -Surface water and groundwater monitoring provide assurance that water quality at the COU boundary is protective.
- -Institutional controls are effective in preventing unacceptable exposures to residual contamination by prohibiting building construction,
- controlling intrusive activities, restricting the use of groundwater and surface water, and protecting engineered remedy components.
- -Physical controls are effective at controlling access to the COU.

